Appendix H

Response to comments (7/17/2009)

Pre-decisional Big Creek Project EA

Comments were received from Rick Bowers, Greg Isenberg, Parker Street, Don Mallicoat, Gary Quillen, Lawrence Jervis, Brian Derrick, Mike Giles, Dr. Bob Phillips, Steven L. Stafford and Trent Smith, all affiliated with the Ruffed Grouse Society; Joe Deloach from Tennessee Eastman Hiking Club, Becky Smucker from the Carolina Mountain Club, Josh Kelly and Ben Prater from Wildlaw; and Hugh Irwin, Catherine Murray, and Sarah A. Francisco for Southern Environmental Law Center.

Page numbers refer to the EA initially posted to the website. Page numbering may vary slightly on EA versions viewed or printed from website.

The comments displayed below are excerpted from the original letters, e-mails, and transcripts to represent the essence of the comment or concern. The complete text of the comment may be read in the originals in the project file.

--*Rick Bowers*

Comment: I am in favor of the 296 ac. Early successional habitat project at Big Creek. I only wish it were 2,296 ac.

Response: The lack of early successional forest habitat on public lands was recognized during the Big Creek Project Assessment. The need to create early successional forest habitat is a Purpose and Need for the project.

--*Greg Isenberg*

Comment: One major issue in this area is the lack of sustainable quality habitat for early successional species.

Response: The lack of early successional forest habitat was recognized during the Big Creek Project Assessment. The need to create early successional forest habitat is a Purpose and Need for the project.

Comment: Obviously shelterwood cuts do not provide the same stem density as clear cuts; therefore the quality differs and so does the preference of various species.

Please consider higher stem densities thru the variable clumping of lower basal areas to allow bigger openings as well as placing these areas in a way that they are within close proximity on one another (diagonally) to aide in protective cover.

Response: A minimum *average* of 15 BA must be left in any regeneration treatment over 10 acres (Forestwide Standard 34). This will be the prescribed leave basal area in all regenerated areas unless greater leave is needed for scenery mitigation. The Standard provides for clumping and variable densities, allowing some areas without overstory.

Comment: The biggest opportunity is in maximizing the level of 0-10 year age class on the areas currently being pursued for management.

Response: This EA proposes utilizing commercial timber harvest to create early successional forest habitat in Compartments 342-344, and 349, and there are 3,774 acres suitable for timber management in these compartments. These compartments are in Prescription Area 7.E.2 that has an early successional forest habitat objective of up to 10%. Alternative B creates early successional forest habitat on 7.8% of the suitable acres and Alternative C creates early successional forest habitat on 8.6% of the suitable acres. The maximum objective of 10% could not be achieved. The Proposed Action proposed the maximum amount of regenerated stands based on availability of mature stands, juxtaposition of regenerated stands across the landscape, and after consideration of other resources and economics.

--*Joe Deloach*

Comment: …due to the distance of this project from the section of the Appalachian Trail that the Tennessee Eastman Hiking and Canoeing Club maintains, we have no comments either supporting or opposing the EA

Our only concern is to ensure that our neighbor club which maintains this section of the Appalachian Trail, the Carolina Mountain Club, has had an opportunity to review and comment. I am copying their leaders.

Response: Thank you for your review and comments.

--*Becky Smucker*

Comment: Joe; thanks for your email. I'm forwarding this to Ruth Hartzler, Chair of our Conservation Committee, which oversees this kind of issue for CMC.

Response: We have not received any further comments from Carolina Mountain Club.

--*Parker Street*

Comment: I am writing to express my support for the Proposed EA in the Big Creek area located in Cocke County.

We are interested in the manner in which the forest is managed and appreciate the opportunity to provide our input in the planning process.

Response: Thank you for your comments.

--*Don Mallicoat*

Comment: Objective 7.E.2-1.01: To think that this large area has NO early successional habitat for wildlife is unimaginable. All science points to the fact that a minimum of 10% early successional is needed to support wildlife such as ruffed grouse and wintering song birds like the golden-winged warbler.

Response: The lack of early successional forest habitat on public lands was recognized during the Big Creek Project Assessment. The need to create early successional forest habitat is a Purpose and Need for the project. (See previous responses)

Comment: Objective 17.02: Oak mast is an important source of winter food for a number of wildlife. The ACGRP found that oak mast was a critical source of food for southern Appalachian grouse during the winter.

Response: The pre-harvest site preparation, post-harvest treatments, release thinning, and midstory treatments are proposed so that oak and other mast-producing tree species will be a component of future stands.

--*Gary Quillen*

Comment: I would like to encourage the Forest Service to use this project to create early successional habitat. This is the habitat that is most needed in the area.

Response: The lack of early successional forest habitat was recognized during the Big Creek Project Assessment. The need to create early successional forest habitat is a Purpose and Need for the project. (See previous responses)

--*Lawrence Jervis*

Comment: Clear-cutting is very essential for all wildlife and is greatly needed in East Tennessee. Without this OUR wildlife will continue to diminish.

Response: The lack of existing early successional forest habitat such as clear-cutting creates was recognized during the Big Creek Project Assessment. The need to create early successional forest habitat is a Purpose and Need for the project. This Proposed Action proposes to create early successional forest habitat through clear-cutting and shelterwood harvest with a commercial timber sale. (See previous responses.)

--*Brian Derrick*

Comment: The American Bird Conservancy listed loss of Eastern Deciduous Early-Successional Habitat as one of its Top 20 most threatened bird habitats. The Appalachian Cooperative Grouse Research Project (ACGRP) found that grouse chick survival was mush higher (35%) in mixed-mesophytic sites and ruffed grouse selected early successional habitat due to their high stem density to avoid avian predators.
The low level of early successional habitat (0%) in the project area obviously limits a whole suite of species.

Response: Please see the previous responses. The need to provide early successional forest habitat for the many species of wildlife that utilize this forest habitat is a Purpose and Need for the project.

--*Mike Giles*

Comment: …the American Breeding Bird Survey indicated that from 1980-2007 in the Blue Ridge Mountains, 31% of songbirds breeding in early successional habitat declined. From 1966 to 2007, 44% of early successional songbirds declined, while less than 1% showed increasing trend.

The American Bird Conservancy listed loss of Eastern Deciduous Early-Successional Habitat as one of its Top 20 most threatened bird habitats. The Appalachian Cooperative Grouse Research Project (ACGRP) found that grouse chick survival was mush higher (35%) in mixed-mesophytic sites and ruffed grouse selected early successional habitat due to their high stem density to avoid avian predators.

It is likely that this project will greatly enhance wildlife diversity in the project area, particularly with regard to ruffed grouse, deer, and songbirds.
Response: Thank you for your comment.

Response: Please see the previous responses. The lack of early successional forest habitat was recognized during the Big Creek Project Assessment. The need to create early successional forest habitat is a Purpose and Need for the project.

--*Dr. Bob Phillips*

Comment: I support the early successional work.

Response: Thank you for your comment.

--*Steven L. Stafford*

Comment: I second Mike's summary below. *(Mike Giles Email)*. I started hunting grouse in East Tennessee in the late 70's getting 15-20 flushes per day, the last 5-10 yrs has been 0-3 per day, occasionally 4 or 5, and occasionally zero.

Response: Thank you for your comment. Please see responses to Mike Giles comments and other previous responses.

--*Trent Smith*

Comment: I would like to voice my support of the Big Creek EA project. Habitat and subsequently the Ruffed Grouse population is dwindling fast and we must do something to improve this problem.

Response: Thank you for your comments. Please see the previous responses.

--*Josh Kelly and Ben Prater of Wildlaw*

Comment W1: EA is unresponsive to our concerns and fails to meet the obligations of NEPA to sufficiently address public comments.

EA does not thoroughly investigate the environmental costs and benefits of the proposed action.

Response: The environmental effects of all proposed activities are considered under Direct Effects under each resource topic in the EA.

Comment W2: In particular the responses to our comments opposing the harvest of Stands 242-51 and 242-52 are insufficient.

Response: Also, see response to C31 under SELC. The issue of opposition to logging in the "Laurel Mountain Tennessee Mountain Treasure" brought up by WILDLAW during the scoping period has been "already decided by law, regulation, Forest Plan, or other higher level of decision." These stands are in Prescription Area 7.E.2, a prescription area described in the Cherokee National Forest Revised Land and Resource Management Plan, signed in 2004, as "suitable for timber management" and having an early-successional forest objective of between 4 and 10%.

Comment W3: NEPA requires that the environmental costs of logging those two stands be weighed against the benefits, and the costs of logging those two stands have not been satisfactorily considered, nor would not logging those stands impair the ability of Cherokee NF to accomplish the goals of its Forest Plan.

Response: The environmental effects; including the benefits, as appropriate, of all stands proposed for commercial timber harvest are considered under Direct Effects under each

Resource topic in Environmental Consequences section of the EA. Not logging those stands would decrease the benefits of creating early-successional forest for wildlife in the 7.E.2 Prescription Area, especially in Compartment 242.

Comment W4: …the issue we raised suggesting limit ground disturbing activities in mesic forest types to limit the spread and establishment of non-native invasive plants (Big Creek EA, Appendix B; BC 19). The response of Cherokee NF, that following this recommendation would prevent the implementation of the Forest Plan, is clearly false.

It is clearly possible to actively manage while minimizing soil disturbing activities in mesic forests.

Response: The actual response in Appendix B is **"**Restricting activities in mesic areas would prevent accomplishing the Desired Conditions for this area as directed by the Revised Land and Resource Management Plan. Nonnative invasive species treatments are planned to ameliorate invasive species introduction resulting from activities planned to carry out Plan direction."

Regenerating 268 or 299 acres to create early-successional forest could be accomplished this time by concentrating the harvest only on Xeric stands, but the Desired Condition of Prescription Area 7.E.2 of maintaining a diverse and vigorous forest with four to ten percent in early successional forest could not be accomplished in the long-term by ignoring the management of up to 50% of the forested area.

The EA recognizes that proposed activities may introduce nonnative invasive species, and proposes treatments to control this (Proposed Action and Alternatives Section, Items #4, 5, 6, 9, 10, and 11).

Comment W5: On the issue of climate change, FS is acting negligently by ignoring cumulative impacts.

The impact of all Forest Service actions on the carbon budget of the US is significant and Big Creek Project contains a large portion of the carbon sequestered in Cocke County, TN

Response: Effects of the Big Creek Project on carbon sequestration and climate change are discussed in the EA on pages 92-94.

There is insufficient information available to guide land managers in specific situations to change forest management practices to increase carbon sequestration, and there is some uncertainty about the longevity of effects (Caldeira *et al.*, 2004).

With harvest methods that minimize soil disturbance, the conversion of approximately 60% of the harvested wood to durable products and the limited area of impact, the forest-

wide influence of harvests included in the Big Creek project are considered to be inconsequential to overall forest sequestration.

See also responses to Comment S29 under SELC.

Comment W6: … the assumption is made that younger forests are more "healthy" and resilient than mature forests or all-aged old growth forest and less susceptible to pests and diseases than older forests.

With regard to insect pests like southern pine beetle and gypsy moth, and also to oak decline, Cherokee NF makes the assertion that "young vigorous trees" are more resilient to those threats than mature trees.

Response: The EA states on page 49 and 50 that "forested stands over 81 years old have been reduced to 60% of the analysis area and remain susceptible to oak decline, gypsy moth, Southern Pine Beetle, Hemlock Wooly Adelgid, and natural disasters such as wildfire, ice storms and wind events. An age class of regenerating forest has been introduced, 5% for 7.E.2. This would begin the diversity of age classes needed for a more resilient forest.

Release thinnings would occur on 212 acres. These thinnings would improve the general stand health in these stands by reducing competition for sunlight and nutrients."

There is only one reference to "a young, vigorous stand of timber that may be more resilient to the changes in climate" on page 92.

Comment W7: Oak (1993) found that red(Quercus rubra) and scarlet (Quercus coccinea) oaks suffering from oak decline were significantly younger than healthy canopy trees.

Response: The finding credited to Oak seems to be lifted out of context from *"Persistence of Oak Decline in the Western North Carolina Nantahala Mountains"* by S. W. Oak, et. al. Significantly younger is Wildlaw's conclusion, not Oaks. The trees in the study averaged 79 and 90 years old. In this paper, Oak did not make any conclusions from the measurements on two sites in North Carolina, but did offer several possible explanations, none of which suggested that younger trees are inherently more susceptible to oak decline. It is more likely that the older trees are suppressing the younger trees, and they are more liable to be stressed, and 79 year old suppressed trees are not "young, vigorous trees". Wildlaw has not presented "New Information" here.

Comment W8: In managing for gypsy moth, Liebold et al (1998) found that there was no difference in defoliation by gypsy moth in logged vs. unlogged stands.

Response: This conclusion by Wildlaw also seems out of context. Liebold et. al. in *"Does Forest thinning affect predation on gypsy moth larvae and pupae?"* was studying predation on gypsy moth in thinned and unthinned stands as the title suggests. He found that "Although thinning my increase predator abundance, this apparently does not translate into increased rates of predation." So thinned and unthinned stands still would get defoliated. There was no conclusion in this paper of how stand age or vigor would affect defoliation and certainly no discussion of how a "young, vigorous" stand may be better able to recover after defoliation. The EA makes no claim that "young, vigorous" trees will not be defoliated.

Comment W9: Kleiner and Montgomery (1994) found that gypsy moth susceptibility was linked not to size or age of trees but species and site quality, with more xeric sites being the most susceptible.

Muzika et al. (2000) found that "[t]here is little or no evidence that silviculture can be used for altering susceptibility [to defoliators] other than eliminating host species. In some cases this represents an ecological and economic dilemma."

Response: See Response to Comment W8**.** The EA makes no claim that this project will result in trees not being defoliated.

Comment W10: ...the notion that "young vigorous trees" create healthy forest has been rejected by the forestry community itself, at least in forests managed for multiple uses, as detailed by the National Commission on Science for Sustainable Forestry (2008).

Response: See response to Comment W6 under *Wildlaw*. How the National Commission on Science for Sustainable Forestry rejects that young vigorous trees do not create healthy forest in detail, is not clear from this comment or by reading the *"Science, Biodiversity, and Sustainable Forestry: A Findings Report of the National Commission on Science for Sustainable Forestry"*.

Comment W11: …oppose the shelterwood harvest of stands 242-51 and 242-52. These stands are part of the least fragmented section of Forest Service Ownership in the Big Creek Watershed and part of the Laurel Mountain Tennessee Mountain Treasure.

Response: See response to Comment W2, and to S31 under SELC. The RLRMP has already decided management direction for this area.

Comment W12: Shelterwood logging will require follow-up treatments, will fragment the forest in this area, and make the forest more susceptible to invasion by non-native invasive organisms.

Response: Follow-up treatments of site preparation with chainsaw slashdown and/or herbicide treatment after harvest, chainsaw slashdown or herbicide treatment of overly-

competitive sprouts at approximately two years after harvest, and chainsaw release of mast-producing trees at about age 10; are included in Item #4 of the Proposed Action. This includes treating invasives at every entry in Item #4.

Forest fragmentation occurs when forested areas are converted to non-forest land uses, especially when these conversions result in carving the forested areas into ever smaller tracts, and/or are large enough or changed enough to prevent the movements of wildlife between remaining tracts. This project does not convert significant acreage to non-forest uses. The Shelterwood harvested areas are converted to an early-successional stage of forested condition.

Comment W13: We oppose the use of herbicides in 499 acres of midstory treatments…

Most of this work can easily be accomplished with hand tools. The extra expense in labor will be made up for by the decrease in herbicide costs.

Response: Experience has shown that herbicides are more effective and cost-efficient than alternative manual methods in most cases. In midstory control, the stems that are severed with handtools would sprout, almost immediately, probably with multiple stems, negating the treatment or even worsening the situation. In treatments like mast tree, commonly done by chainsaw, the objective is to reduce crown competition for light. Cut-off stems will sprout but be at a considerable competitive disadvantage. In midstory control, the stems to control are shading the forest floor and preventing the initial establishment of oaks and other mast species. The immediate sprouting would not allow this establishment.

Current Cherokee National Forest Silvicultural Contract prices (2009) for mechanical slashdown are about $100/acre. Contract treatment for herbicide application is about $92/acre (including herbicide). Costs are subject to change based on the economy.

Comment W14: We oppose the creation of 32 acres of additional "wildlife" openings. These openings are unnatural and favor ruderal vegetation and invasive species…at the expense of native species.

Response: On page 10 in the Issue Significance Discussion section in the EA, and in Appendix B**,** it was explained that "No new wildlife openings are created in this proposal. The planting of mast-producing shrubs in skid trails and landings on 32 acres within the harvested areas are proposed to enhance wildlife forage as the stands regenerate. These areas would not be maintained as open area."

Comment W15: We oppose adding OR-9 to the road system. In our pre-scoping comments, we proposed to commercially thin a poplar stand adjacent to OR-9 and were told that doing so was impossible because of outlaw OHV traffic in the area. We fail to see how adding a road to the system will help alleviate this Outlaw OHV traffic.

Response: This issue was discussed in the Issue Significance Discussion section in the EA, and in Appendix B. Old Roads (OR) 11 **a**nd 12; and Outlaw (OUT) 12 are the roads that are receiving the majority of the illegal ATV use in this area and these roads are proposed for decommissioning (Item 12). OR-9 was determined during the Travel Analysis Process to be needed for long-term resource management needs; OR-11, OR-12, and OUT-12 were not.

Comments W16: Suggestions for Big Creek Project:

Look for opportunities to meet Obj. 17.01 and 17.02

Response: Items #2 and 5 in the proposed action are designed to address Objectives 17.01 and 17.02. Additional opportunities to convert white pine plantations may occur as these stands mature and become merchantable, but for now these opportunities are beyond the scope of this project and not ripe for decision.

Comment W17: Complete a thorough RAP and identify and close all unneeded roads on the road system.

Response: A TAP has been completed and is available on the Cherokee NF website at http://www.fs.fed.us/r8/cherokee/planning/watershed_assessments/big_creek/roads/index.shtml. The decommissioning of 5.98 miles of "Unneeded" roads suggested by the TAP is in items #12 and 13.

Comment W18: Remove C242/S51 and C2342/S41 from the timber sale.

Response: See response to Comment W2, and C31 under SELC. The RLRMP has already decided management direction for this area. These stands are in Prescription Area 7.E.2, a prescription area described in the Cherokee National Forest Revised Land and Resource Management Plan, signed in 2004, as "suitable for timber management".

Comment W19: ...provisions should be made to mitigate for Silene ovata if it is located after the EA comment period and/or the decision period.

Response: Silene ovata (Blue Ridge catchfly) is on the Sensitive species list and is known to exist along a road in the project area where no actions are proposed. The areas of proposed ground-disturbing activities have been surveyed for TES species. If Silene ovata is found during project implementation this would be treated as "New Information" and evaluated accordingly.

Comment W20: In daylighting roads, leave some areas forested to act as barriers to non-native plant establishment and dispersal.

Response: There will be riparian leave areas and areas of no merchantable timber where no activity will occur. As described in the Proposed Action in the EA, mast-producing trees will generally be retained.

--Hugh Irwin, Catherine Murray, and Sarah Francisco of Southern Appalachian Forest Coalition

Comment S1: Issues and reasonable alternatives were improperly treated (non-significant, not considered, analyzed, nor addressed).

Response: The analysis of scoping comments is documented in Appendix B of the EA and the process for Issue development in discussed in the EA at page 7 and 8. Labeling an issue as not-significant through this process does not mean it is unimportant, but that it is not significant to this analysis because of the reasons given in Appendix B and the EA.

Comment S2: Issues regarding ecological restoration and restoration needs in the Gulf Tract.

Response: The RLRMP directs the management of this area and this EA implements the RLRMP. The Forestwide Goals and Objectives are listed in the EA on pages 2-4, and the Prescription Area Goals and Objectives are listed on page 4. As stated on page 5: "The purpose of this proposal is to implement activities within the Big Creek Project Area to achieve desired conditions as outlined in the Prescription Area Directions."; and on page 6: "The Need for Action responds to the goals and objectives outlined in the Revised Cherokee National Forest Plan, and helps move the project area towards desired conditions described in that plan."

In the Proposed Action there are several items that are proposed for restoration: Items 1 and 2 restores wildlife habitat by creating early successional forest habitat; Item 2 also restores native plant communities by converting a white pine stand to native hardwoods; Items 3, 4, 6, and 9 restore native plant communities and restore wildlife habitat by insuring that regenerating stands have a compliment of native tree species including mast-producing species; Item 5 restores native plant communities by favoring native mast-producing hardwoods in a white pine plantation thinning; Items 7 and 11 restore wildlife habitat by providing forage, water, and shelter; Item 10 restores viable native plant communities by controlling invasive species; Item 11 restores wildlife habitat and native wildlife species by providing fish habitat structures, increased food production, and by stocking Brook Trout; and Items 12 and 13 decommission 5.98 miles of roads, contributing to several restoration objectives, including watershed restoration.

Comment S3: Issues of why non-commercial work is rejected.

Response: The rationale for not considering further activities in the Gulf Tract and other stands in the Big Creek Area are discussed in the EA under Alternatives Considered But

Not Developed on pages 22 and 23. In many cases restoration work on some stands is being *deferred*, not "rejected", until they reach commercial size where they can be more economically treated. This EA and this Project take on activities to implement the RLRMP that are ripe for decision at this time. This EA does not analyze everything that could ever be done in the area. The project focus is narrowed down through the Purpose and Need and Proposed Action.

Comment S4: Issues with the management of the road system, particularly in the Gulf Tract.

Response: The Travel Analysis Plan gave recommendations for a transportation system for Big Creek that is the "…minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands."(Title 36 of the Code of Federal regulations §212.5) after considering the benefits, problems, and risks (Step 4, RAP). The Proposed Action incorporated the recommendations in the TAP as Items #12, 13, and 14.

Specifically, in the Gulf Tract, .59 miles of road were deemed unneeded and are proposed for decommissioning in the EA as Item 12, Proposed Action. No additional roads are added to the system in the Gulf Tract. Existing roads in the Gulf Tract under Forest Service jurisdiction are: Forest Service Road (FSR) #22501-6.66 miles, closed in winter; #2251-4.11 miles, open road; #2250-6.93 miles, open road; #225102-2.08 miles, closed in winter. During the TAP process these roads were determined to be needed under the definition above.

The September 2009 ver. of the Travel Analysis Plan is on the Cherokee NF website at http://www.fs.fed.us/r8/cherokee/planning/watershed_assessments/big_creek/roads/index.shtml and in the Big Creek Project File, Section S.

See also response to Comment S19, S24 and S25.

Comment S5: Issues with the importance of Big Creek to landscape connectivity and as a corridor for wildlife habitat and movement.

Response: See responses to S23 and S28. One definition of landscape connectivity is the human perspective of the connectedness of patterns of vegetation cover in a given landscape. In the Record of Decision for the Cherokee National Forest Revised Land and Resource Management Plan, under the Rationale for the Decision, under the Issue of *Terrestrial Plants and Animals and Their Associated Habitats;* "I choose Alternative I because it recognizes the unique role of the national forest in providing older, interior forest habitats in balance with the recognition of the importance of native pine forest, woodland, grassland, and early successional habitats." The Forestwide Goals, Objectives, and Standards in the RLRMP, such as those on pages 28-50, all reinforce the emphasis the RLRMP has for landscape connectivity and plant and animal habitat. The Goals,

Objectives, and Standards of the individual Prescription Areas in the Big Creek Area further reinforce this emphasis.

The Cherokee National Forest is proposing the Big Creek Project to work toward the desired condition for this area as directed in the 2004 Cherokee National Forest Revised Land and Resource Management Plan. The purpose of this proposal is to implement activities within the Big Creek Project Area to achieve desired conditions as outlined in the Prescription Area Directions. (EA page 5).

The effects of the proposed activities on Forest Communities, Successional Habitats, Terrestrial Habitats, Management Indicator Species, Demand Species, Rare Communities and Species, and Aquatic Resources are discussed in the Biological Section of the EA.

(S5 continued): The habitat connection is particularly important for black bear, a Management Indicator Species.

Response: Black bear and white-tailed deer are the most likely of the terrestrial animals analyzed that travel over long distances and would cross over into adjacent areas. The EA on page 69 found that "The black bear population trend would continue to be positive as a result of this alternative"; and on page 77: "Because of the increase in food sources and diversity of habitat on 1,069 acres, spring and summer bear activity may increase within the watershed." This project area will continue to provide habitat for wide-ranging animals. Black bear and others analyzed would continue to move into, out-of, and through the project area, as it provides quality habitat.

In cooperation with Tennessee Wildlife Resource Agency (TWRA), the Cherokee National Forest is managed as a Wildlife Management Area. Bear are legally harvested during regular seasons. In a TWRA publication, "A New Era in Black Bear Management in Tennessee" available at: http://tennessee.gov/twra/bearmanage.html it is stated that in 2008, Tennessee had a record breaking bear harvest of 446 bears. It also states in this publication that "Tennessee's bear population thrives today largely due to the dedication of the TWRA, CNF, GSMNP, the bear research program at University of Tennessee and the support of Tennessee sportsman license dollars." This is a tribute to the consideration that the Cherokee National Forest gives wildlife, such as bear in the management of areas like Big Creek.

(S5 continued): Important to consider this project's cumulative effects of connectivity combined with the effects of Harmon Den timber sale in the Pisgah.

Response: Each Resource analyzed in the EA develops a "Scope of Analysis" to stipulate the geographical and temporal boundaries for analysis of that resource. The Scope of Analysis for each resource is displayed immediately before the discussion of effects. The area and period for the Scope is the size where the effects are no longer

quantitatively or qualitatively relevant or until the effect being analyzed becomes stable. Different resources have scopes of different scale.

The Biological Resource has the largest geographical scope (EA on page 62): "The scope of this analysis for direct and indirect effects on biological resources includes the 16,777 acres of Forest Service lands within the Big Creek watershed. For viability concerns and cumulative effects, the scope of the analysis includes the entire CNF to address Goal 10 in the RLRMP to maintain viable populations of all native species across the CNF." "For aquatic species, the scope of analysis includes tributaries of Big Creek adjacent to and downstream of proposed activities." There is no overlap with the Harmon Den Project and Harmon Den is in a different watershed than that analyzed. The closest timber harvesting areas in the two projects are about 2.5 miles apart.

The EA found that the project would not threaten the viability of any rare species on the CNF (EA, pages 71, 78, and 82).

Comment S6: Issues with the importance of Laurel Mountain Area for its landscape connectivity, wildlife corridor and unroaded values.

Response: See response to Comment S5, 23, and S31. The issue of opposition to activities in the "Laurel Mountain Tennessee Mountain Treasure" has been "already decided by law, regulation, Forest Plan, or other higher level of decision." The proposed vegetation management activities are in Prescription Area 7.E.2, a prescription area described in the Cherokee National Forest Revised Land and Resource Management Plan, signed in 2004, as "suitable for timber management" and generally available for other management activities. The proposed activities are not taking place in any of the other Prescription Areas that restrict these activities such as 1.A, 1.B, 2.B.1, 2.B.2, 2.B.3, 4.A, 4.E, 4.F, 9.F, 12.A, or 12.B. This area is not a Roadless Area or Wilderness Study Area under the RLRMP.

Comment S7: Need to identify and protect existing old growth and to designate an old growth network.

Response: About 105 acres in Stands 42 and 43 in Compartment 242 were designated as existing old growth during the Big Creek Project Area Assessment. This is referred to in the EA on pages 46, 49, and 50 in the discussion of compliance with Objective 7.E.2-1.01. These stands were suggested as possible old growth by WILDLAW in a 2006 letter. No other stands were suggested as having old growth characteristics.

During the assessment process, stand ages in the GIS database were reviewed for Possible Old Growth. No stands meeting the minimum age class for Possible Old Growth as defined in "Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region" (FR-62) were found Table FR1 on page 43 shows 38 acres in the age class of 111+. These two stands are 111 years

old in 2009. Stands designated as Existing Old Growth must meet four criteria, one of which would be a minimum age that varies by Forest Type. This miminum age varies from 100 to 140 years. Neither of these stands are included in any proposed action.

The Purpose and Need of this project (EA Pages 5 and 6) does not include delineating Future Old Growth. However, none of the activities proposed in the Big Creek Project preclude doing this. All regeneration proposed is on suitable lands. None of the stands proposed for regeneration in the Big Creek Project meet even the minimum age criteria for Existing Old Growth in Forestry Report FR 62 (EA Table A1 and A2 on page 14, A3 on Page 15; and Table A12 and A13 on Page 20).

See response to Comment 31. In Appendix D on Page 328 of the RLRMP, "Examples of future old growth include allocations of wilderness and backcountry management prescriptions. Included in this category of future old growth are riparian areas and other unsuitable lands." There are approximately 8,039 unsuitable acres in the Big Creek project area, not counting the unmapped riparian areas within suitable stands (Page 43, EA). This is approximately 48% of the Big Creek Area and is well distributed within.

Page 26 of Forestry Report FR 62 states: "For those stands that do not meet the operational definitions for old growth and if they are not part of any old-growth allocation or management direction identified in the forest plan, then there is no old-growth issue associated with the project."

Comment S8: NEPA requires the Forest Service to a take a "hard look" at all relevant factors:

NFMA (16 USC 1604(g)(3)(A)(B)

Response: The Forest has complied with NFMA regulations. The EA discloses in the Purpose and Need (pages 5 and 6) and the Environmental Consequences the protection for watershed (pages 29-36), wildlife, fish, and plant and animal communities (pages 63-83.)

(S8 continued) USFS transportation regulations 36 CFR 212.5

Response: The September 2009 version of the Roads Analysis is on the Cherokee NF website at http://www.fs.fed.us/r8/cherokee/planning/watershed_assessments/big_creek/roads/index.shtml and in the Big Creek Project File, Section S.

(S8 continued) RLRMP (Goals 1, 3, 10, 13,15, 16, 17, 18, 48, and 49

Response: Forestwide Goals and Objectives are stated on pages 2 and 3. The proposed actions (Proposed Action, pages 5-6) by the Forest Service to meet the Purpose and Need specifically list each action with the corresponding Goal and/or Objective.

(S8 continued) Desired Future Condition of Prescription 7.E.2 (page 130 "protects and restores the health, diversity and productivity of the land"; page 131 "Biological communities are maintained or improved" and "High quality watershed conditions are provided.")

Response: Prescription Area Goals and Objectives are stated on pages 3-4. In addition, specific items in the Proposed Action are directed at fulfilling the management prescription requirements as defined in the 2004 RLRMP.

(S8 continued) Forest Service directives regarding restoration and the Regional strategic plan and other guidance regarding restoration.

Response: Management of all National Forests, including the Cherokee National Forest, emphasizes multiple-use as prescribed by the Multiple-Use Sustained –Yield Act of 1960 and the National Forest Management Act. Sustaining forest productivity and other multiple –use goods and services requires that land managers balance multiple objectives. Accomplishment of these statutory objectives is defined in the 2004 RLRMP.

(S8 continued) Lack of reasonable alternatives, including logging less, logging differently, mitigation measures, and restoration alternatives.

Response: Alternative A, the No Action alternative (No logging) and two Action alternatives (Alternatives B and C) that differ in the amount of commercial logging are described in detail in the EA on pages 13-21. Mitigation measures are displayed on pages 21 and 22, and scenery design features in Appendix G. The action alternatives include several restoration activities (see response to S2). Additional alternatives were considered but not developed (page 22 and 23). One of these considered suggestions from scoping to non-commercially thin immature white pine and Yellow-poplar stands to begin restoration. The rationale for deferring these suggestions until they can be commercially harvested is given.

The Proposed Action utilized commercial timber harvest to meet the Purpose and Need of early successional habitat creation and restoration thinning. There is no legal requirement to develop alternatives that do not meet the Purpose and Need of the project.

Comment S9: The analysis of effects on soil and water is inadequate.

Appendix F is lacking: Types of soils in project area and hazards, limitations, and capabilities.

Table 2 of Appendix F does not describe characteristics of specific soils types that Table 3 shows are present in the project stands.

Response: Table 2 in Appendix F in the EA posted on the Cherokee NF Website is missing several rows including data for Brasstown, Cataska, Chestnut, Craigsville, and Ditney soils. This updated table will be posted on the web at the time of the decision. Here is the corrected version of Table 2.

(Appendix F) Table 2: Description of Soils

Mapunit Name	Mapunit Symbol	Erosion Hazard	Rutting Hazards	Haul Road & Log Landing Limitations	Harvest Equipment Operability
Brasstown	BtD	Severe	Severe	Moderate	Moderately suited
Cataska	CaF	Severe	Severe	Severe	Poorly suited
Cataska	CaG	Severe	Slight	Severe	Poorly suited
Chestnut	ChE	Severe	Moderate	Moderate	Moderately suited
Chestnut	ChF	Severe	Moderate	Severe	Poorly suited
Chestnut	ChG	Severe	Moderate	Severe	Poorly suited
Craigsville	Cr	Slight	Moderate	Severe	Well suited
Ditney	DhE	Severe	Moderate	Moderate	Moderately suited
Ditney	DhF	Severe	Moderate	Severe	Poorly suited
Ditney	DhG	Severe	Moderate	Severe	Poorly suited
Junaluska	JaC	Severe	Severe	Moderate	Moderately suited
Junaluska-Brasstown	JbD	Severe	Severe	Moderate	Moderately suited
Junaluska-Brasstown	JbE	Severe	Severe	Moderate	Moderately suited
Junaluska-Brasstown	JbF	Severe	Severe	Severe	Poorly suited
Keener l	KfD	Severe	Severe	Moderate	Moderately suited
Keener	KfE	Severe	Severe	Moderate	Moderately suited
Keener	KfC	Severe	Severe	Moderate	Moderately suited
Maymead	MaE	Severe	Severe	Moderate	Moderately suited
Maymead	MaF	Severe	Severe	Severe	Poorly suited
Northcove	NoE	Severe	Slight	Moderate	Moderately suited
Northcove	NoD	Moderate	Slight	Slight	Well suited
Porters	PsE	Severe	Severe	Moderate	Moderately suited
Porters	PsF	Severe	Severe	Severe	Poorly suited
Soco	SoE	Severe	Moderate	Moderate	Moderately suited

Soco	SoF	Severe	Severe	Severe	Poorly suited
Sylco-Cataska complex	SyF	Severe	Slight	Severe	Poorly suited
Sylco-cataska complex	SyG	Severe	Severe	Severe	Poorly suited
Tusquitee	TuF	Severe	Severe	Severe	Poorly suited
Unicoi-Rock outcrop complex	UnF	Severe	Moderate	Severe	Poorly suited

Soil series that are within the timber sale unit boundaries are disclosed in Appendix F. Soil series descriptions are given of each series; in Table 2 limitations and hazard ratings associated with timber harvesting are shown for individual soil map units, and the location of these map units are presented in Table 3.

Comment S10: Some relevant soil characteristics were not considered at all, including specific slopes in stands proposed for logging, suitability for woodland (timber management), risk of seedling mortality, and windthrow hazard.

Response: Slope classes are shown for each soil type in the Map Unit Symbol column of Tables 2 and 3 in Appendix F of the EA. In Table 3 slopes are shown for each compartment and stand where timber harvesting is proposed and other vegetation management practices.

Comment S11: NRCS Soil Survey states that slopes may limit the use of mechanized equipment; soils have "severe" erosion hazard and rutting hazard rating; risk of seedling mortality is "moderate" or "severe"; and considers many soils to be "poorly suited" for timber management.

Response: The NRCS does not determine whether timber can or should be harvested from an area or not. NRCS provides soil performance information which can be used to plan and manage activities with minimal impacts to the soil resource. The NRCS classifies soils and makes interpretations about soil characteristics. The ratings, limitations, and suitability interpretations assigned to soil types are intended to be used to help determine effects that may occur from management activities and to show the level of complexity for a given practice on a given soil type. The NRCS suitability and limitation ratings generally assume the most commonly used conventional tools and techniques will be utilized, and specifically state that special design, extra maintenance, and alteration, or more extreme measures might be implemented to help overcome the limitations. These interpretations aid in the development of design criteria and/or mitigation measures for the project which reduces or eliminates impacts to the soil resource.

Locations that require special precautions are identified and are considered in the analysis in the EA on pages 37-42. In Table 2 in Appendix F hazards and limitations are

addressed for individual soil types within harvest units. The location of each soil type is presented in Table 3. The soil map unit symbol shows the slopes class.

Planting of hardwood seedlings to convert pine plantations to hardwood are proposed in Stand 10 in Compartment 243 and Stand 9 in Compartment 10 (Item 2 in the Proposed Action). Portions of these stands are on soil types where "seedling mortality may be high" from the Soil Survey. If hardwood seedling survival is poor portions of these stands may regenerate back to pine, a less demanding species. Restoration of these stands to hardwoods was proposed by SAFC, but 100% conversion may be difficult due to soil limitations. Regeneration of the Stands in Item 1 rely on natural regeneration. Planting of seedlings is not proposed to accomplish regeneration in these stands. Possible planting of American Chestnut is proposed in Item 4, on areas meeting strict conditions set up by the American Chestnut Foundation.

Comment S12: Discusses impacts in general terms but no detailed analysis of impacts to soil, erosion, and sedimentation.

Response: Effects from timber harvesting are found on page 38 and 39 of the EA. On page 38 of the EA specific soils that have a higher risk of being impacted from proposed activities are addressed. Design Criteria recommendations are also incorporated. The locations and acres of these soils are presented in Table 3.

(S12 continued): While the EA advises "extra caution" (EA at 37), it does not say exactly what extra precautions will be taken to avoid adverse impacts. EA does not reflect the "careful planning" or "special precautions" that NRCS advises.

Response: The term "extra caution" is not an NRCS term. This term was used to show that the soil characteristics of these soils differ from the other soil types in the project area and may require more attention in design of roads to accomplish the project with minimal resource effects. The only road construction proposed is 0.3 miles in Compartment 244.

(S12 continued): The EA doesn't explain how effects to soil and water can possibly be short-term and insignificant.

Response: Analysis for the conclusions of short term and insignificant effects can be found on pages 30, 31, 32, 34, and, 39 of the EA.

For instance: "The duration of this possible effect is generally considered to be less than five years. After this time period, sprouts, seedlings and other vegetative growth reestablish the cut area and effectively tie up available nutrients." (EA, page 31), and "With proper mitigation applied, all effects of timber harvest on soil loss, sediment yield and compaction would return to precutting conditions within 2 to 5 years." (EA, page 39).

(S12 continued): EA does not address the potential effects on sediment levels in streams.

Response: Effects of Sediment are discussed in the EA under Soil and Water Resource on pages 28, 29, 30, 34, 35, 36, 38, 39, and 41 and under the Biological Resource on pages 65, 75, and 76.

Comment S13: The EA relies on standard mitigation measures and certain assumptions, without assessing whether standard measures will be sufficient given the specific soils and slopes here, the likelihood that mitigation will be effective, or the likelihood that assumptions will come to pass.

Response: Standard mitigations are sufficient for the proposed activities in this EA, and the effects analysis on pages 29-42 of the EA are based on implementation of the mitigations discussed in the EA on pages 21 and 22. Design Criteria is recommended if roads are developed on Maymead and Tusquitee soils (on page38). These design criteria would prevent the need for additional mitigation measures.

Comment S14: General statements about 'possible effects' and 'some risk' do not constitute a 'hard look'**.**

The Forest Service has substantial obligations under the NFMA and the Revised Forest Plan regarding soil, productivity, regeneration, and water quality.

Response: The Forest has complying with NFMA and the RLRMP. Soils, productivity, and water quality are addressed throughout the EA, particularly on page 29-42. The Forest Soil Scientist and Hydrologist have visited this project area.

See response to Comment S11, 3rd paragraph for a discussion on regeneration methods.

(S14 continued): The EA must fully disclose these soils' specific characteristics, slopes, hazards and limitations and fully analyze and consider the effects of logging here.

Response: Soil characteristics are in the soil descriptions in Appendix F, along with slope class. Hazards and limitations are shown in Table 2. Corrected version of Table 2 is shown under response to Comment S9. Stands treated and acreage in respective soil types is displayed in Table 3 of Appendix F. Effects of logging on these soil types in these stands are discussed in the EA on pages 38-42.

Comment S15: Consider an alternative of not logging areas not well suited to timber management, such as areas with steep slopes and severe hazard ratings.

Response: Alternative A, The No-Action Alternative is analyzed as the alternative where no logging is proposed. Alternative A is the baseline to compare the effects of the action alternatives, Alternative B and C. The effects to the Soil and Water Resource for all three alternatives are in the EA on pages 29-42.

Comment S16: Primary focus of work in Big Creek watershed should be restoration.

EA doesn't address broader restoration issues (improper rejection).

Support proposed activities that are legitimate restoration.

Response: See response to Comment S2, S3, and S6. The RLRMP directs the management of this area and this EA provides alternatives for consideration to implement the RLRMP, and there are several activities proposed for restoration.

Comment S17: Region 8 Strategic Framework has also established restoration of ecological systems as one of its three main goals and areas of focus.

Timber targets are still the primary driver for the Big Creek project.

Response: See response to Comment S8. The Purpose and Need for this project on page 5 states that: "The purpose of this proposal is to implement activities within the Big Creek Project Area to achieve desired conditions as outlined in the Prescription Area Directions." Prescription Area 7.e.2 has an objective of between 4 to 10 percent in early-successional forest. Commercial timber harvest is a cost-effective tool to create early-successional forest.

Comment S18: Regenerated even age stands will not have the composition, structure, function or productivity of native forest ecosystems.

Response: Items 4 and 6 in the Proposed Action are proposed to "…assure that the harvested stands would be restocked with indigenous species. The relative abundance of species may vary from the previous stands but no forest type changes are expected with these methods, except in the regenerated former white pine dominated stands. These stands would be encouraged to regenerate to native hardwoods. Post-sale release treatments are planned to ensure that the stands would have a strong component of mast-producing species to provide forage for wildlife. Without these treatments, light-seeded species such as yellow-poplar and red maple would increase in relative abundance at the expense of cherry, oaks, and hickories." (EA page48)

Comment S19: Many of the shelterwood regeneration areas and midstory treatments are within the Laurel Mountain Tennessee Mountain Treasure area.

Response: See response to Comments S6 and S31. These stands are in Prescription Area 7.E.2, a prescription area described in the Cherokee National Forest Revised Land and Resource Management Plan, signed in 2004, as "suitable for timber management" and generally available for other management activities. The proposed activities are not taking place in any of the other Prescription Areas that restrict these activities such as 1.A, 1.B, 2.B.1, 2.B.2, 2.B.3, 4.A, 4.E, 4.F, 9.F, 12.A, or 12.B. This area is not a Roadless Area or Wilderness Study Area.

(S19 continued): Unclear whether midstory treatment efforts have any ecological restoration purpose or primarily preparing for future regeneration.

Response: As stated on page 47 of the EA: **"**If these stands are not harvested in the future, the advance oak regeneration is still available to replace trees lost to natural causes.

(S19 continued): Stand 242-30 is an inappropriate mid-story treatment area and cannot be justified as ecological restoration.

Response: This comment is moot. This stand was dropped from the original Proposed Action and is not included in the Modified Proposed Action analyzed in the EA as Alternative B or in Alternative C. See EA on page 22.

(S19 continued): The Laurel Mountain area is a area is key part of the landscape connection between Great Smoky Mountains National Park and the Bald Mountains.

Response: See responses to S6 and S31.

(S19 continued): RAP and EA should have considered impacts of roads within this area

Response: See response to S4, S19, S24, and S25. A Travel Analysis Plan has been completed and the EA analyzed the effects of roads.

(S19 continued): The Gulf Tract obtained from Champion Paper was significantly impacted from years of heavy forest management.

Road density is very high, with significant stream impacts from legacy roads.

Remove old legacy roads leading to aquatic and terrestrial resource and habitat damage

Restore stream segments damaged by road impacts and past management

Response: See Response to Comment S4. During the Big Creek Project Area assessment, most of the logging roads in the former Champion International lands were not included in the Travel Analysis inventory because they have already been closed to

vehicular traffic. The Forest Soil Scientist reviewed these old logging roads and skid trails, and found them to be vegetated, and in most cases reforested and no further restoration was needed.

In the Proposed Action, 0.59 miles of road are decommissioned in the Gulf Tract.

Heavy maintenance on about 17.93 miles of Forest Service Roads #2250, #2251 #22501 has just been completed (September 2009).

Additional soil and water restoration needs may be authorized under Categorical Exclusions or additional NEPA analysis in the future, as needed. They are not in the Purpose and Need for this EA.

(S19 continued): Protect remaining forest, recover forest from low species and structural diversity**.**

Response: See Response to Comment S3. Restoration work is being *deferred*, not "rejected", until these stands reach commercial size where they can be more economically treated. The Purpose and Need and the Proposed Action do not include these non-commercial activities.

(S19 continued): Remove invasive species from area.

Response: In the EA, Items 5, 6, and 10 include treating nonnative invasives in all treatment areas. Those areas not in treatment areas can be treated under the existing Non-Native Invasive Plant Control EA, signed on June 30, 2008.

Comment S20: There is a major age and structural imbalance

Mid-succession forests are vastly over-represented while there is very little true old growth forest.

Response: As shown in Table FR1 in the EA on page 43, 80% of the Big Creek Area is between 41 and 110 years old. Less than 1% is older than 110 years old. In the absence of large scale disturbances or management, these acres will continue to age and eventually reach the minimum age to qualify for Old Growth, and there will not be a shortage of late successional forest at that time. Old age stand attributes are not created through NFMA or NEPA analysis, only by time. What will be in short supply in the future are stands in the early- to mid-successional stages.

Also see response to S7 and S31.

(S20, continued): Frequently proposed is need for more logging to create early succession, yet reality is this approach only perpetuates the structural problems by keeping the forest in even aged condition.

Response: The imbalance in age classes and the preponderance of even-aged stands shown in Table FR1 is a legacy of the extensive logging beginning about the 1900's, prior to Federal ownership. The Big Creek Area has a somewhat higher percentage in the 11-40 year age class (19%) than the Cherokee Forest Average, due to the Gulf Tract, purchased from Champion International that practiced intensive management, and due to Forest Service timber sales in the 1970's, 80's, and 90's.

Table FR1: Age class distribution-All Forested Lands

Big Creek Project Area- Base year 2009					
Age	0-10	11-40	41-80	81-110	111+
Acres	6	3171	7248	6246	38
Percent	<1	19	43	37	<1

Alternative C regenerates 327 acres, the largest amount of the two alternatives. This is about 2% of the total Big Creek Area of 16,777 acres. Even if this scenario were carried out every 10 years, the age class distribution might look like this in 100 years (The year 2013 was used as the mid-point year for project implementation in the EA, page 44).

Age Class Distribution All Forested Lands in Big Creek in the year 2113					
Age	**0-10**	**11-40**	**41-80**	**81-110**	**111+**
Acres	327	981	1308	981	13180
Percent	2	6	8	6	78

Assuming there have been no widespread stand-replacement calamities, the distribution would be heavily weighted toward Late-Successional and Old Growth. However, the *forest* is not in an even-age condition, but has some diversity of age classes, built up by creating mostly two-aged stands (from leaving the overstory in shelterwood regeneration, the age given is that of the regenerated majority of the stocking). The forest will remain weighted toward an even-age condition for some time, without occasional regeneration, natural or managed. The goal is an uneven-age forest, with a diversity of age classes from 0 to 111+, made up of even-age (actually mostly two-age) stands.

(S20 continued): Structural diversity provides many of the habitat benefits of early succession habitat.

Response: The 7.E.2 Prescription areas have objectives for early-successional forest. The RLRMP defines this as: "The biotic community that develops immediately following the removal or mortality of most of the forest canopy, resulting in a predominance of woody species regeneration."

(S20 continued): Areas within Laurel Mountain, Walnut Mountain and Wolf Creek areas should be allowed to develop this natural species and structural diversity.

Response: See response to Comment S6 and S31. The RLRMP has already decided management direction for this area.

Comment S21: White pine stands and old clear-cuts with little species or structural diversity are excellent candidates for restoration.

Consider an alternative to take advantage of additional opportunities to restore species diversity and/or structural diversity through commercial or non-commercial activities, thereby contributing to meeting the early successional habitat objective.

The watershed assessment and the EA do not indicate the district actively or thoroughly sought to identify opportunities for ecological restoration and fully consider all options for accomplishing it

Response: See response to Comment S2, Comment S3, and Comment S8.

Comment S22: Illegal ATV use

Watershed assessment and EA failed to recognize the need to curtail illegal ATV use.

EA must consider the risk that road improvements and temporary road construction will increase illegal ATV use.

Response: Illegal ATV use is common over much of the forest, and the Big Creek Project Area is no exception. This area is patrolled by one Law Enforcement Officer. There are too few Law Enforcement Officers and too little budget, but that is beyond the scope of this EA.

Three roads that are heavily used by illegal ATV's are being decommissioned (Item 12, Proposed Action).

Comment S23: The Big Creek area, along with adjacent areas in Pisgah National Forest, forms an essential landscape conservation connection between the Great Smoky Mountains and the Bald Mountains.

The importance of this landscape linkage has been repeatedly raised in comments. The Response to Comments categorizes this issue as "outside the scope of the proposed action", "already decided by law, regulation, Forest Plan, or other higher level of decision"

Response: See Response to Comment S5, S6, and S28. The Forestwide Goals, Objectives, and Standards in the RLRMP, such as those on pages 28-50, all reinforce the emphasis the RLRMP has for landscape connectivity and plant and animal habitat. The Goals, Objectives, and Standards of the individual Prescription Areas in the Big Creek Area further reinforce this emphasis. Because this project follows the direction of the RLRMP and because of the emphasis in the RLRMP, this issue is "already decided by the…Forest Plan".

(S23 continued): WO restoration guidance makes it clear that planners are to address the resiliency of ecosystems and their adaptability to sustainability issues, including climate change.

Response: There is nothing in Interim Directive 2020-2008-1 that would direct the forests to dispense of their Forest Plans developed under the National Forest Management Act. The Cherokee National Forest RLRMP very much recognizes the role that the Cherokee National Forest has in these issues, and this is reflected in the Forestwide Goals, Objectives, and Standards and the Goals, Objectives, and Standards in the individual Prescription Areas found in the Big Creek Project Area. This is evident in the 7.E.2 Prescription Area where the Emphasis includes "protects and restores the health, diversity, and productivity of the land" and the Desired Condition includes to "maintain the long-term goals of a diverse and vigorous forest" and "provide varied plant communities, structural stages, and associated wildlife" (RLRMP on pages 131 and 132) .

This project implements the RLRMP and works toward the Desired Condition of Prescription Area 7.E.2.

There is insufficient information available to guide land managers in specific situations on project level impacts on uncertain climatic conditions. The Proposed Actions should result in ecological communities which will provide a buffer to changing climate.

(S23 continued): The public has pointed out the importance of habitat in the project are, role as corridor for wildlife movement, importance of enhancing landscape connectivity in the area for species adaptation and movement in response to climate change, yet the EA improperly dodges addressing this issue.

Preserving and enhancing this existing landscape linkage should be a primary consideration in project development for this area.

The proposed activities would harm the area's ability to function as a corridor for wildlife habitat and movement, yet the EA does not reflect any consideration of this issue.

Response: See Response to S5. The effects of the proposed activities on Forest Communities, Successional Habitats, Terrestrial Habitats, Management Indicator

Species, Demand Species, Rare Communities and Species, and Aquatic Resources are discussed in the Biological Section of the EA.

(S23 continued): Values of key elements of landscape connectivity (Laurel Mountain Tennessee Mountain Treasure Area) are ignored.

Response: See response to Comments S5, S6, and S31.

(S23 continued): Important to consider the effect of the proposed project and the area's ability to function as a corridor for black bear. Adjacent Harmon Den area is a bear sanctuary.

Combined area of Pisgah NF, Cherokee NF, and GSMNP is the most important corridor for bear traveling.

Response: See response to Comment S5. The EA on page 69 found that "The black bear population trend would continue to be positive as a result of this alternative"; and on page 77: "Because of the increase in food sources and diversity of habitat on 1,069 acres, spring and summer bear activity may increase within the watershed." This project area will continue to provide habitat for wide-ranging animals. Black bear and others analyzed would continue to move into, out-of, and through the project area, as it provides quality habitat. Wide-ranging species such as birds and megafauna like black bear and deer may move easily through various habitat conditions to find their habitat needs and to locate new territories. Habitats that are affected by the vegetation treatments, such as timber harvest and release thinning, are relatively abundant in the project area and the surrounding forest. These vegetation treatments will have very short-term disruptive effects and will not limit the availability of habitats within the Big Creek Watershed.

No new system roads are constructed. Effects of the current road system are considered as the existing condition; the conditions that would continue under Alternative A that is the baseline for effects analysis of the action alternatives. The effects of decommissioning 5.98 miles of existing roads are considered in the effects analysis. Impacts from the temporary road would be short-term and would diminish as the road vegetates and this is considered in the effects analysis.

Natural migration routes for the movement of species over time that might be needed in response to changing climate are expected to remain after implementation of the Big Creek Project because the connectivity of forested habitats will remain.

Bear sanctuaries were designated by state wildlife resource agencies (Tennessee Wildlife Resource Agency and North Carolina Wildlife Resource Commission) as areas closed to hunting to give breeding females protection, and where as populations grew they would move out of protected areas into adjacent habitat. There are no restrictions beyond the Forest Plan Prescription Area Standards in these sanctuaries, and there are no additional

restrictions placed upon National Forest lands simply because they are "near" bear sanctuaries. The wildlife agencies generally support vegetation management activities.

(S23 continued): Tunneled ridge over I-40 provides the only unimpeded travel corridor for bear between GSMNP and NF lands.

Response: The consideration of additional travel corridors for bear over Interstate 40 is beyond the scope of this EA.

(S23 continued): Scientific research at UTK and NC State documents effects of roads on wildlife on NF lands yet this was not considered in the EA

Response: Effects of the current road system are considered as the existing condition; the conditions that would continue under Alternative A that is the baseline for effects analysis of the action alternatives. The effects of decommissioning 5.98 miles of existing roads are considered in the effects analysis. Impacts from the temporary road would be short-term and would diminish as the road vegetates and this is considered in the effects analysis.

The effects of Interstate Highways and activities on private lands are considered as part of the existing condition. Activities to alter these conditions are beyond the scope of this EA.

(S23 continued): Landscape connectivity of this area should be a major focus, including protecting late-successional forest, reducing the adverse effects of roads and removing roads that are not absolutely needed.

Response: Tables FR4 on page 46 of the EA, FR6 on page 48, and FR8 on page 50 show that the Prescription Area Objective for late-successional forest is exceeded in all alternatives.

A TAP has been completed and is available on the Cherokee NF website at http://www.fs.fed.us/r8/cherokee/planning/watershed_assessments/big_creek/roads/index.shtml. The decommissioning of 5.98 miles of "Unneeded" roads suggested by the TAP is in items #12 and 13.

Comment S24: The over-built road system in the Big Creek area should be a major focus of restoration work. This should be fully addressed in the EA and the RAP.

Comments on draft RAP were never addressed or deficiencies corrected

No revised RAP was distributed with the EA

Response: The September 2009 version of the Travel Analysis Plan is on the Cherokee

NF website at http://www.fs.fed.us/r8/cherokee/planning/watershed_assessments/big_creek/roads/index.shtml and in the Big Creek Project File, Section S. Title 36 of the Code of Federal regulations §212.5 as published in the Federal Register at 7712.01 (b) …"the responsible official must determine the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands." Through inventory and analysis in the Cherokee National Forest Roads Analysis Report (December 2002) and the Travel Analysis Plan for the Big Creek Project Area, the road system proposed for the Big Creek area will provide this.

Travel Analysis Plan does not mandate a reduction in roads. It should result in the reduction of unneeded and unauthorized roads. This TAP recommends decommissioning 2.55 miles of unauthorized roads and 3.43 miles of authorized roads. It also recommends authorizing 3.28 miles of unauthorized roads. The EA proposes these recommendations as Items #12, 13, and 14 of the Proposed Action.

(S24 continued): The EA does not adequately address the issues raised.

Response: The effects of roads are considered on pages 29, 33, 34, 38, 39, 64, 65, 67, 69, 74, 75, 76, and 78 in the EA.

As discussed on page 22 of the EA, an alternative that would have added fewer roads to the system and decommissioned more roads was considered but not developed. Roads inventoried during Travel Analysis Plan must be added to the road system or decommissioned to comply with Title 36 of the Code of Federal regulations §212.5. Roads to decommission are those that are not needed for long-term resource management. The Modified Proposed Action adopts the recommendations from the Big Creek Travel Analysis Plan (TAP). The roads to be added to the system were determined during the Interdisciplinary TAP process to be needed for long-term resource management. Those proposed for decommissioning in the Modified Proposed Action are not needed for resource management.

Comment S25: The environmental impacts of the road system in the project area should be considered and addressed in the EA and alternatives should be considered that respond to this issue.

It does not appear that the RAP for the Big Creek project has been revised.

Response: See responses to Comments S4, S19, and S24. The September 2009 version of the Travel Analysis Plan is on the Cherokee NF website at http://www.fs.fed.us/r8/cherokee/planning/watershed_assessments/big_creek/roads/index.shtml and in the Big Creek Project File, Section S.

(S25 continued): The project proposal and the EA are based on an inadequate and flawed roads analysis.

Draft RAP does not address the conservation impacts of roads, fails to address numerous issues as required in the Forest Service Transportation Policy.

Response: "The responsible official has the discretion and duty to determine whether or not a roads analysis below the forest-scale is needed and the degree of detail that is appropriate and practicable" (FSM 7712.13). The District Ranger assigned an interdisciplinary team to conduct a project-level roads analysis and established the level of detail for the TAP. The project-level TAP followed the 6-step process required by the agency, including Step 4: Assessing Benefits, Problems, and Risks.

Travel Analysis Plans are not NEPA documents, but rather are site-specific NFMA analyses. A TAP makes no decisions, but only identifies road related concerns and management opportunities that can be evaluated through the NEPA process. Therefore, comments directly pertaining to the adequacy of the Travel Analysis for the Big Creek Project Area are beyond the scope of the Environmental Analysis for the Big Creek Project.

(S25 continued): EA must fully analyze the effects of adding roads to the system, including explaining why adding roads is reasonable in light of the minimum road system regulation and the fact that the Forest Service cannot adequately maintain the system it already has.

Road system is so extensive that impacts and costs outweigh benefits.

Response: The Travel Analysis Plan gave recommendations for a transportation system for Big Creek that is the "…minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands."(Title 36 of the Code of Federal regulations §212.5) after considering the benefits, problems, and risks (Step 4, TAP). The Proposed Action incorporated the recommendations in the TAP as Items #12, 13, and 14.

(S25 continued): This road system continues to impact stream quality and aquatic habitat, terrestrial habitat, and serves as one of the primary vectors for invasive species.

Response: The effects of roads are considered on pages 29, 33, 34, 38, 39, 64, 65, 67, 69, 74, 75, 76, and 78 of the EA.

Comment S26: Existing old growth should be identified and protected as part of the Big Creek Project.

Response: See response to Comments S7 and S31. About 105 acres in Stands 42 and 43 in Compartment 242 were designated as existing old growth during the Big Creek Project Area Assessment. This is referred to in the EA on pages 46, 49, and 50 in the discussion of compliance with Objective 7.E.2-1.01. These stands were suggested as possible old growth by WILDLAW in a 2006 letter. No other stands were suggested as having old growth characteristics.

During the assessment process, stand ages in the GIS database were reviewed for Possible Old Growth. No stands meeting the minimum age class for Possible Old Growth as defined in "Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region" (FR-62) were found Table FR1 on page 43 shows 38 acres in the age class of 111+. These two stands are 111 years old in 2009. Stands designated as Existing Old Growth must meet four criteria, one of which would be a minimum age that varies by Forest Type. This miminum age varies from 100 to 140 years. Neither of these stands are included in any proposed action.

The determination of existing old growth is part of the assessment process and is beyond the scope of the EA. The Purpose and Need for the EA does not include identifying Existing or Future Old Growth.

(S26 continued): There is no analysis of old growth in the EA.

Response: As disclosed on pages 46, 49, and 50 of the EA, all alternatives meet the objectives of "maintaining a minimum of 50 percent of forested acres in mid- to late-successional forest, including old growth;" and "a minimum of 20 percent of forested acres in late-successional forest, including old growth".

About 105 acres in Stands 42 and 43 in Compartment 242 were designated as existing old growth during the Big Creek Project Area Assessment. This is referred to in the EA on pages 46, 49, and 50.

As stated above under Comment S7: The determination of existing old growth is part of the assessment process and is beyond the scope of the EA. The Purpose and Need for the EA does not include identifying Existing or Future Old Growth.

(S26 continued): EA fails to address the issues brought up in comments.

Designation of C242/S42 and C242/S43 is disclosed without any context or analysis explaining how it would be part of an old growth network

The need for an old growth network should be addressed as part of the Big Creek Project. Laurel Mountain Area, because of its critical role as a landscape corridor should be designated as part of an old growth network

One failure aspect is to address the distribution issue – R8 Guidance dealt with the need identified from conservation biology principles to deal with distribution through designation of small old growth patches that would be distributed through the forest.

Relying on unsuitable lands also fails to address the distribution issue

As part of the Big Creek Project, an old growth network consisting of future and existing large, medium, and small old growth patches should be identified.

Response: See response to S7 and S31. The Purpose and Need of this project (EA Pages 5 and 6) does not include delineating Future Old Growth. However, none of the activities proposed in the Big Creek Project preclude doing this. All regeneration proposed is on suitable lands. None of the stands proposed for regeneration in the Big Creek Project meet even the minimum age criteria for Existing Old Growth in Forestry Report FR 62 (EA Table A1 and A2 on page 14, A3 on Page 15; and Table A12 and A13 on Page 20).

In Appendix D on Page 328 of the RLRMP, "Examples of future old growth include allocations of wilderness and backcountry management prescriptions. Included in this category of future old growth are riparian areas and other unsuitable lands." There are approximately 8,039 unsuitable acres in the Big Creek project area, not counting the unmapped riparian areas within suitable stands (Page 43, EA). This is approximately 48% of the Big Creek Area and is well distributed within.

Page 26 of Forestry Report FR 62 states: "For those stands that do not meet the operational definitions for old growth and if they are not part of any old-growth allocation or management direction identified in the forest plan, then there is no old-growth issue associated with the project."

Comment S27: Cherokee's approach to OG network remains flawed.

Response: See response to Comments S7, S23, and S31. This project follows the Old Growth direction in Appendix D of the RLRMP and the *Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forest Communities on National Forests in the Southern Region*. (USDA Forest Service. Southern Region Forestry Report R8-FR 62 June 1997 (Forestry Report FR 62)).

A substantial network of future old growth composed of small, medium, and large patches of the various old growth types was created for the Cherokee NF by virtue of land management allocations to unsuitable prescriptions. As stated on Page 331, the RLRMP "contains a network of old growth areas composed primarily of future old growth. The RLRMP determined that adequate representation from all old growth community types is provided and these are well distributed across the landscape. The network of riparian areas and other unsuitable prescriptions should provide a good mix of

small, medium, and large old growth patches as outlined in the RLRMP and the Forestry Report FR 62.

The Cherokee National Forest Revised Land and Resource Management Plan Appeal Decision dated July 25, 2006 discusses old growth on Pages 47-48. The disclosure within the 2006 Appeal Decision states "[t]here is no requirement in NFMA, the implementing regulations at 36 CFR 219, or in Forest Service Policy that Forest Plans address old growth." The Southern Region "recognizes old growth forests as a valuable natural resource worth of protection, restoration, and management" *(Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region)*. The Regional Forester acknowledges reliance on this guidance in the Cherokee NF RLRMP ROD (p.6)." "Old growth is identified as a significant issue in the revision of the Cherokee NF RLRMP (FEIS, p. 11). The FEIS discusses old growth and the effects of various alternatives on old growth (pp. 181-188), and the RLRMP establishes old growth goals, objectives, and standards, (p. 38)…RLRMP Appendix D-Old Growth Strategy presents a strategy for existing old growth, possible old growth and future old growth. FEIS Appendix H provides detailed responses to the appellant's concerns regarding old growth (pp. 49-52).

Comment S27: The project area is already heavily affected by invasive exotic plants, particularly along the roads.

The EA should clarify how stands will be monitored for the occurrence of non-native invasives and should be clearly commit to treating occurrences immediately.

Response: Opportunities to monitor and treat non-native invasives would occur at many times during implementation of the individual items in the Proposed Action. For instance, at the time of timber sale closure after Items #1, 2, and 3. During the site preparation activities in Item #4, during the release thinning in Items #5 and 6, during the daylighting in Item #7, during the midstory treatments in Item #9, and during the wildlife and aquatic habitat improvements in Item #10. There are also opportunities during the routine maintenance of roads and wildlife improvements.

(S27 continued): Large amount of stand regeneration, road rebuilding, daylighting, and wildlife openings will create many new avenues for invasives to spread in the Big Creek area.

Response: The EA recognizes that proposed activities may introduce nonnative invasive species, and proposes treatments to control this (Proposed Action and Alternatives Section, Items #4, 5, 6, 9, 10, and 11).

(S27 continued): The EA should explain which shrubs will be planted and how they are more ecologically beneficial than naturally regenerating shrubs.

Response: As explained **o**n page 11 in the Issue Significance Discussion section in the EA, and in Appendix B, Nonnative invasive shrubs such as autumn olive and oriental bittersweet are not planted. Apples are the only nonnative mast-producing species commonly planted. Plantings of mast-producing shrubs for wildlife forage are done to supplement what may or may not naturally regenerate. Enhancing wildlife habitat is a driving force for vegetation management on the Cherokee National Forest.

(S27 continued): Roads are not discussed as one of the primary vectors of non-native invasive exotic plants.

Response: Item #10 in the Proposed Action on page 12 of the EA addresses the recognition that roads may need treated for nonnative invasive species. The Big Creek Travel Analysis Plan also discusses roads role in the spread of nonnative species.

(S27 continued): Ecological restoration activities that concentrate activities in areas that already have infestations while aggressively suppressing these infestations could gain some control of these exotics.

Response: Activities in the EA proposed for restoration (Items #2, 5, 6, 9, and 10) all have a nonnative invasive treatment component to address existing and project-resulting infestations.

(S27 continued): Limiting logging and road building and reducing road mileage are important components of adequately addressing invasive exotic plants.

Response: Reducing logging would not meet the Purpose and Need stated on page 5 of the EA to create early successional forest habitat and restore white pine stands to native communities. Existing road mileage is reduced by decommissioning 5.98 miles (Items #11 and 12). Authorization of 3.28 miles of existing roads (Item #13) does not add to the total mileage, since these roads are already built. No new system roads are constructed with this project.

Comment S28: The EA should consider the impacts on climate change, particularly the ability of species to adapt and move in response to the effects of climate change.

Response: There is insufficient information available to guide land managers in specific situations on project level impacts on uncertain climatic conditions. Climate models vary widely in their predictions of potential changes in the region surrounding this project area. Climate change, while a serious consideration is not well understood nor is its influences and impacts in the area of the Big Creek project clearly implicated. Unintended effects of either the actions of this project or of non-action are simply impossible to discern. The objectives of this project involve improving health and resilience of the forests in the area, which will in turn provide a buffer to changing climate.

(S28 continued): Big Creek area is crucial wildlife corridor and corridor for species to move and adapt to climate change.

Response: See response to Comment S5 and S23. In a general sense the National Forests and other public forest lands in the area provide connectivity of forested habitats.

Two aspects of habitat connectivity could be of concern – first the immediate availability of habitats for species movement within their home ranges, or second the availability of habitats nearby and connections to other pockets of habitats that could provide for species migration. The availability of habitats concern pertains to the opportunity for movement of species due to the effects of climate change.

Wide-ranging species such as birds and megafauna like black bear and deer may move easily through various habitat conditions to find their habitat needs and to locate new territories. Smaller animals, such as amphibians and reptiles, tend to occupy smaller home ranges and may be more sensitive to the loss of habitat proximity or connectivity. Habitats that are affected by the vegetation treatments, such as timber harvests or composition controls, are relatively abundant in the project area and the surrounding forest. These vegetation treatments will have very short-term disruptive effects and will not limit the availability of habitats within the Big Creek Watershed.

No new system roads are constructed. Effects of the current road system are considered as the existing condition; the conditions that would continue under Alternative A that is the baseline for effects analysis of the action alternatives. The effects of decommissioning 5.98 miles of existing roads are considered in the effects analysis. Impacts from the temporary road would be short-term and would diminish as the road vegetates and this is considered in the effects analysis.

Natural migration routes for the movement of species over time that might be needed in response to changing climate are expected to remain after implementation of the Big Creek Project because the connectivity of forested habitats will remain.

(S28 continued): Forest plays a key role in species adaptation.

In general, the definition of species adaptation is a change in structure, function, or behavior by which a species or individual improves its chance of survival in a specific environment. Adaptations develop as the result of natural selection operating on random genetic variations that are capable of being passed from one generation to the next. Variations that prove advantageous will tend to spread throughout the population. (Dictionary.com 2009)

The National Forest Management Act ensures that Forest Service actions provide for diversity of plant and animal communities based on the suitability and capability of the

specific land area in order to meet overall multiple-use objectives of a land management plan adapted…where appropriate, to the degree practicable.

The Proposed Action is in response to the Goals and Objectives of the RLRMP. The EA documents the effects analysis of the biological resource (pages. 54-82) with relationship of species and habitat framework as defined by the RLRMP. There are no RLRMP Objectives, Goals, or Standards specific to climate change and species adaptation. The Proposed Actions would improve the health and resilience of the forests in the area, which will in turn provide a buffer to changing climate.

(S28 continued): The EA should consider the impacts on climate change and the impact from climate change on potential recovery of ecological communities.

Response: Management of all National Forests, including the Cherokee National Forest, emphasizes multiple-use as prescribed by the Multiple-Use Sustained-Yield Act of 1960 and the National Forest Management Act. Accomplishment of these statutory objectives is defined in the 2004 Revised Land and Resource Management Plan for the Cherokee National Forest (2004 RLRMP). Neither the principal statues nor the 2004 RLRMP require or suggest that climate change supersedes the statutorily defined purposes of national forest management. Sustaining forest productivity and other multiple-use goods and services requires that land managers balance multiple objectives.

Effects to vegetation, wildlife, and aquatics communities are considered and disclosed in the EA and project record and are based on past, ongoing, and projected trends known and understood for those species at the time the EA was published. It is important to establish that no one particular source of information is correct regarding climate change. Multiple advice, recommendations, and opinions vary, not only locally, regionally, but nationally. Uncertainty regarding climate change is the only certainty. Ecological Communities do change in composition based on different stressors, for example, drought on pine component followed by southern pine beetle. The habitats of some mountain species (terrestrial and vegetation) may change in response to warming. Breeding patterns, water and food supply, and habitat availability would be affected to varying degrees by climate change. Regional climate change combined with other human-induced stresses to further increase the vulnerability of ecosystems to pests, invasive species, and loss of native species and may continue to occur well beyond the duration and locale of this project's effects. Analyzing the effects to an individual species based on the uncertain influence of climate change would be speculative.

(S28 continued): The project should address the impact of logging stable cove hardwoods, boulderfield, and other forest communities under climate change conditions and the likelihood of reestablishing these communities with a natural complement of species and structure.

Response: Effects to Mesic deciduous forests, Eastern hemlock and white pine forests, and oak and oak/pine forests are discussed in the EA on pages 63, 65, 76, 79, and 80. As stated on page 55 of the EA, "Other habitats, communities, and species identified in the RLRMP that do not occur or would not be impacted are not discussed further."

No Boulderfields are known to be affected by the project activities. If boulderfields qualifying as a rare community are found during implementation, they would be protected as directed in the RLRMP as Prescription Area 9.F – Rare Communities.

(S28 continued): The EA does not address the potentially significant short-term effect on hard mast production and does not take into account the possibility that mid-successional forest will not mature into a forest of the same quality as the one proposed for cutting.

The late-successional forest that will be lost is in the generally good, functioning condition and would continue to produce hard mast for decades.

The EA should address the likelihood that mid-successional stands will mature into forest of comparable value for wildlife habitat and hard mast production. AND

The EA also should consider logged forest will regenerate with a component of oaks and other species that is comparable to the current forest

Response: The effects to the project on hard mast are discussed in the EA on pages 63, 65, 66, 69, 70, 72, 76, 77, 79, and 81.

Items # 4, 6, and 9 are proposed specifically to increase the likelihood that mast-producing species are a component of the regenerated stands.

Many mast trees will be retained as leave trees in the Shelterwood Method (EA, page 47). These will continue to provide mast and seed for oak regeneration. In Tables FR6 on page 48, and FR7 on page 50, mid-successional forest would be 20% of the area and late successional forest would be 60%. Mast availability would not be a concern immediately after implementation of the proposed regeneration. As these oaks age acorn production would decline. Without regenerating some oaks to replace oaks as they age, acorn production would eventually decline below optimum. The optimal condition would be a landscape that contains many different age classes of mast producers; some regenerating and maturing toward optimum production, some at optimum production, and some past optimum. The way to do this is to periodically regenerate oak. The silvicultural treatments (Items 4, 6, and 9) listed under the Alternatives on pages 15-17, and 21 of the EA, are proposed to achieve an increase in the incidence of mast producing trees in the regenerated stands in the long-term.

(S28 continued): Does this district have monitoring data that demonstrates that oaks and other desired tree species are regenerating in recently logged stands and in what numbers?

Response: A stocking survey is required three years after the regeneration harvest following Direction in FSH 2472.4 to determine the numbers of acceptable trees per acre.

Comment S29: The EA should consider the potential of carbon sequestration in this area.

Response: Carbon sequestration is discussed in the EA on pages 92-94.

(S29, continued): Project analysis should address the fact established from research that harvesting old growth and mature forest will release more carbon than can be sequestered by young forest for long periods.

Logging old growth and mature forest that sequesters the maximum amount of carbon is one of the first contributors that should be addressed.

Response: Carbon sequestration is the process by which atmospheric carbon dioxide is taken up by trees, grasses, and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage, and roots) and soils. The sink of carbon sequestration in forests and wood products helps to offset sources of carbon dioxide to the atmosphere, such as deforestation, forest fires, and fossil fuel emissions.

Sustaining forest productivity and other multiple-use goods and services requires that land managers balance multiple objectives. The long-term ability of forest to sequester carbon depends in part on their resilience to multiple stresses, including increasing probability of drought stress, high severity fires and large scale insect outbreaks associated with projected climate change. Thus, even though some management actions may in the near-term reduce total carbon stored below current levels, in the long-term they may improve the overall capacity of the forest to sequester carbon.

Sustainable forestry practices can increase the ability of forests to sequester atmospheric carbon while enhancing other ecosystem services. Planting new trees and improving forest health through thinning and prescribed burning, for example, are some of the ways to increase forest carbon in the long run. Harvesting and regenerating forests can also result in net carbon sequestration in wood products and new forest growth. Although not a statutorily defined purpose of National Forest System management, forests provide a valuable ecosystem service by removing carbon from the atmosphere and storing it in biomass.

Older, mature forest generally store more carbon than younger forests. However, disturbance and succession dynamic, and eventually, carbon dynamics differ from

individual forests and regionally. Generally, the harvesting of a stand would temporarily convert the stand from a carbon sink that currently removes carbon from the atmosphere to a carbon source that emits carbon through biomass decomposition and wood products. These stands would remain a source of carbon to the atmosphere (a lesser carbon sink) until carbon uptake by new and remaining trees again exceeds the emissions from decomposing dead organic material. When stands regenerate because of re-growth of trees, carbon initially lost in the disturbance would recover as stands continue to grow and develop. Consequently, the long-term effect of net carbon storage is zero.

(S29 continued): The Forest Service should be addressing its contribution to elevated levels of atmospheric carbon and the effect of elevated CO2 on global climate change.

Response: Generally, it is recognized and presumed that the forests of the United States reduce the global warming potential of fossil fuel emissions by removing a measurable portion of carbon dioxide from the atmosphere. The most recent estimates indicate that the U.S. forests and wood products sequester approximately 910 teragrams of carbon dioxide eq. In 2007, and the net annual sequestration has increased by 50 percent since 1990 (US EPA 2009, page 7-15). According to the U.S. EPA, this represents about 15 percent of the total U.S. greenhouse gas emissions in 2007 (US EPA 2009, pages ES-4). Another recent analysis estimates that U.S. forest and wood products offset nearly 20 percent of U.S. fossil fuel emissions (Pacala et. a. 2007).

These nation-wide estimates are produced as part of a U.S. Climate Change Science Program and the U.S. contribution to the United Nationals Framework Convention on Climate Change program to develop and periodically update national inventories of greenhouse gas emission sources and sinks. In addition, to the U.S. Forest Services contributions to these national efforts, the Forest Service also conducts national assessments of its activities on global warming (Joyce et. al. 2008; Ryan et al. 2008; USDA 2007; Joyce et al. 2000). Given the global scale of global warming, national, an international inventories, syntheses, and assessments, are a much more effective methods of evaluating cumulative effects of land management and other human activities on atmospheric concentrations of carbon dioxide and other green house gases than analysis of individual, small-scale vegetation management projects.

There is insufficient information available to guide land managers in specific situations to change forest management practices to increase carbon sequestration, and there is some uncertainty about the longevity of effects (Caldeira *et al.*, 2004).

With harvest methods that minimize soil disturbance, the conversion of approximately 60% of the harvested wood to durable products and the limited area of impact, the forest-wide influence of harvests included in the Big Creek project are considered to be inconsequential to overall forest sequestration.

Comment S30: Other issues which should be considered:

The district should consider an alternative that would leave 40 sq. ft. BA or higher in all stands

Response: The suggestion for an alternative with 40 sq. ft. BA was not brought out during scoping, but a call for BAs less than 20 was. One of the Purpose and Need's stated in EA is the creation of early-successional habitat, as defined in the RLRMP as "A vegetative condition typically characterized by low density to no tree canopy and an abundance of herbaceous and/or woody ground cover". Forestwide Standard FW-34 in the RLRMP also directs that forest regeneration treatments greater than 10 acres will retain a minimum of 15 sq. ft. of Basal Area, so the proposed regeneration areas in Item 1 prescribe a minimum leave of 15-20 sq. ft. BA. (Page 47), in order to create quality early-successional forest to meet the Purpose and Need. As leave Basal Area increases the quality of early-successional forest declines up to the point of about 40 sq. feet. BA, where Silviculturist and Biologists feel that regeneration and creation of significant early-successional forest is not being accomplished nor effective in the benefits or results for the desired habitat.

Higher BAs in some stands and portions of stands are prescribed as recommended scenery design features in Appendix G to the EA. In the absence of this the minimum BA is applied to create quality early-successional forest habitat.

(S30 continued): The EA does not disclose the volume of timber expected to be harvested and the number of board feet proposed to be harvested under each alternative.

Response: The effects to the resources discussed in the EA are dependent on how much area is manipulated and the vegetative and animal responses after the timber removal, rather than how much timber is actually removed. An estimate of the volume is used in a financial analysis to predict how well revenues cover costs as directed by Forest Service Handbook 2409.18 (See EA, Economics Section, page 95.). This volume estimate is included in the Project File as Section PQ-3. Volume estimate for Alternative B is 3,240 ccf (hundred cubic feet) of Sawtimber, and 324 ccf of pulpwood. Estimate for Alternative C is 3,550 ccf of sawtimber, and 355 ccf of pulpwood. These are estimates; actual timber removed would be cruised and scaled.

(S30 continued): The rare communities identified in the project area should be added to the rare community prescription.

Response: In the RLRMP, Standard RX9F-1 under Prescription Area 9.F states: "Manage Rare Community locations, wherever they occur across the CNF, under the 9.F (Rare Community) Prescription Goals, Objectives, and Standards. Rare communities identified during botanical surveys done for this project will be managed under 9.F under the RLRMP. This does not require an additional NEPA decision.

Comment S31: The Project implements the Revised Forest Plan; therefore it implicates the multiple legal violations of the Revised Forest Plan and is itself illegal for those reasons.

Response: This comment is concerned with the alleged violations of the 2004 Revised Land and Resource Management Plan and the subsequent violation of this project implementing the 2004 RLRMP. The following responses are based on the 2006 Appeal Decision.

(S31 continued): The failure, under NEPA, NFMA, and the Data Quality Act, to disclose and address highly relevant and significant historical information and more recent reports and studies regarding the natural processes and regeneration of the Southern Appalachian forests;

Response: From the 2006 Appeal Decision: The 2004 RLRMP "provides a broad program-level direction for management of the land and its resources… This LMP does not contain a commitment to select any specific project. An environmental analysis is conducted, when required, on these projects as they are proposed." (2004 RLRMP, Page 1) The Cherokee National Forest Revised Land and Resource Management Plan Appeal Decision dated July 25, 2006 (2006 Appeal Decision) states on Page 19 "[a] discussion of the Quentin Bass material and how it was considered and used during the Plan revision process is found in FEIS Appendix H, P[ublic] C[omment] #7-184 (p. 50). The appeal record (A.R.) also contains the Quentin Bass report, outside specialists' analyses of the report and other materials related to consideration of this report (A.R. #RO-12)…The report contained many points 'which are corroborated by a predominance of mainstream scientific literature,' and such points 'are incorporated in the Revised Plan and EIS.' However, as substantiated by the specialists' analysis, the Quentin Bass report 'rejects or ignores the substantial body of scientific literature (much of it published in the last 10 years) that contradicts his conclusions' (Appendix H, p. 50 P.C. #7-184)." In addition, the decision finding states the following: "The Cherokee NF RLRMP and FEIS meet the public disclosure requirements of the NEPA regulations, and I find no violation of law, regulation, or policy.

(S31 continued): The illegal and inadequate roadless inventory, under NEPA, NFMA, and the Wilderness Act, including the failure to inventory Laurel Mountain as a roadless area;

Response: From the 2006 Appeal Decision: The 2006 Appeal Decision discusses roadless inventory on Pages 8-9, 42-47. The discussion within the 2006 Appeal Decision states the following:

- "[t]he 1964 Wilderness Act (P.L. 88-577), NFMA Regulations, and FSH 1909.12 provide specific direction for the inventory and evaluation of roadless areas for identifying and evaluating potential wilderness…(Appeal Decision Page 42)

- 36 CFR 219.17 (July 1, 1998) requires that roadless areas within the National Forest System be evaluated and considered for recommendation as potential wilderness during the forest planning process. This regulation states that areas subject to evaluation include those areas previously inventoried in RARE II, a unit plan, or in a forest plan, which remain essentially roadless and undeveloped… (Appeal Decision Page 42)

The FEIS documents the Roadless Inventory process (pp. 312-327, 2006 Appeal Decision Page 42). "A new Roadless inventory was conducted as part of the SAA with additional guidelines developed by the S[outhern] A[rea] A[ssessment] team and the Southern Regional Office staff to facilitate consistent application of the process…An initial inventory of 18 areas was displayed in the SAA. The inventory was refined as these areas were evaluated through the evaluation process documented in FEIS Appendix C." (Appeal Decision Page 42) Further 2006 Appeal Decision discussion states "[a] review of A.R. #DD-82, Cherokee National Forest Roadless Area Inventory (Part A), documents the numerous efforts made by the Forest to update and verify the roadless inventory and to involve the public. (Appeal Decision Pages 42-43) "#DD-28 also includes the analysis summary of public comments on the SAA Roadless Area Inventory, including both those areas that met the improved road density criteria and those that did not meet the criteria. Additional public review, including open houses, was conducted to involve the public in the review and verification process." (Appeal Decision Page 43)

In conclusion, the 2006 Appeal Decision states (Page 43) the following:

> A.R. #DD-82, Cherokee National Forest Roadless Area Inventory (Part A), includes a 'Roadless Area Inventory' report to the Regional Forester, dated July 6, 1995. This report documents revisions to the inventory based on application of the Regional Forester's guidelines and evaluation of proposals received from the public at open houses conducted on February 21 and 22, 1995. The revisions include areas that were dropped as they did not meet the Regional Forester's guideline for solitude or primitive and unconfined type of recreation due to their proximity to open roads, or because they exceeded the allowed road density. These determinations are consistent with the Regional Forester's criteria for the inventory of roadless areas.

(S31 continued): The inadequate analysis of impacts, especially cumulative impacts, to water quality and aquatic habitat and species, under NEPA, NFMA, the Clean Water Act and the Endangered Species Act (ESA);

Response: From the 2006 Appeal Decision: The 2006 Appeal Decision addresses the issues of water resources and aquatic species on Pages 30-32. The discussion on Page 30 of 2006 Appeal Decision states:

> NFMA address the protection and conservation of water resources and the viability and diversity of aquatic species. 36 CFR 219.27(a)(1) requires all

> management prescriptions to 'conserve soil and water resources and not allow significant or permanent impairment of the productivity of the land.' 36 CFR 219.27(f) provides that 'conservation of soil and water involves the analysis, protection, enhancement, treatment, and evaluation of soil and water resources, ' and 36 CFR 219.26 and 219.27(g) provide for diversity of plant and animal communities in the forest planning context.

In addition, the 2006 Appeal Decision found "[a] review of the water resources goals and objectives, management direction (RLRMP, pp. 2-23 to 2-26); Riparian Prescription 11, p. 165), monitoring questions (RLRMP Chapter 5, p. 232), and specific monitoring tasks (RLRMP Appendix G, pp. 5-425 to G-441) of the Cherokee RLRMP demonstrates compliance with NFMA regulatory requirements." (Appeal Decision Page 30) Thus, 2004 RLRMP addresses water resource guidance.

Likewise, the 2006 Appeal Decision found:

> [t]he aquatic species viability evaluation process for the Cherokee is described in FEIS Chapter 3 (pp. 282-288). The Forest assessed the viability of fish and aquatic invertebrates listed as federally threatened or endangered, regionally sensitive and locally rare by 5th level watershed (FEIS, pp. 284285). Forty-five aquatic species were evaluated, including fish, insects, mussels, and a turtle (FEIS, pp. 285-286). (Appeal Decision Page 30)

For the above rationale, the 2006 Appeal Decision states that "[t]he RLRMP and FEIS, including supporting documentation, meet the requirements of 36 CFR 219 for terrestrial, aquatic, and locally rare species viability… I find no violation of law, regulation, or policy." (Appeal Decision Page 32)

(S31 continued): The arbitrary and capricious nature of the riparian prescription 11;

Response: From the 2006 Appeal Decision: The 2006 Appeal Decision discusses riparian areas on Pages 11, 12, and 48. The discussion within the 2006 Appeal Decision states the following:

- The development of the riparian prescriptions and streamside management zones is outlined and documented in the Process Record for Riparian Management Consideration in Land Management Planning (A.R. #MN14). (Appeal Decision Page 48)
- The Regional Office first provided guidance to Forests concerning riparian management on May 12, 2000 (Riparian Management Direction, 05-12-2000), and again on November 9, 2001 (prescription for the Southern Appalachian Draft Revised Forest Plans.). (Appeal Decision Page 48)
- The Cherokee NF was consistent with Regional direction for riparian corridor widths in the DEIS and FEIS." (Appeal Decision Page 48

- The management standards in the LMP for the combined riparian corridor and streamside filter zone are more restrictive than Tennessee BMP's [Best Management Practices]. (Appeal Decision Page 11)
- The LMP also applies additional standards that are applicable to the riparian corridor and streamside filter zone that are not found in Tennessee's BMP's (p. 159)…[t]he RLRMP contains 32 prescriptions specific to protecting riparian dependent resources (pp. 165-168). In addition, there are 19 forest-wide standards (FW-1 through 19; RLRMP, pp. 24-27) which apply to water, soil, and aquatic species." (Appeal Decision Page 11)

Subsequently, the 2006 Appeal Decision finding states:

- "a review of the management direction in the Cherokee RLRMP demonstrates that the Riparian Corridor Prescription and forest-wide standards are adequate to 'to mitigate the impacts of Forest Service activities on water quality and watershed conditions" (Appeal Decision Page 11)[,] and
- "I find [t]he RLRMP used and complied with Regional guidance for old growth, riparian areas, and stream management zones. I find no violation of policy." (Appeal Decision Page 48)

(S31 continued): Violations of the ESA, especially the failure to formally consult with the Fish and Wildlife Service regarding impacts to the Indiana Bat and aquatic species;

Response: From the 2006 Appeal Decision: The 2006 Appeal Decision discusses ESA compliance on Page 37-39. As stated on Page 37 of the 2006 Appeal Decision, "[t]he implementing regulations of the ESA provide direction to agencies on the consultation procedures to follow when dealing with listed or proposed species, and designated or proposed critical habitat (50 CFR 402). Consultation procedures are described under 50 CFR 402 Subpart B, with requirements for biological assessments listed in 50 CFR 402.12. Informal consultation and formal consultation are discussed in 50 CFR 402.13 and 50 CFR 402.14."

The Cherokee NF conducted informal consultation with Fish and Wildlife Service as part of the RLRMP planning process. A biological assessment was prepared by the Cherokee NF and the determination of effect for implementation was not likely to adversely affect listed species (BA, A.R. #JAH133) (Appeal Decision Page 37)

The 2006 Appeal Decision further states:

- "[t]he FWS agreed in a letter of concurrence that based on their review of the RLRMP, FEIS, and BA, the biological assessment was adequate and supported the conclusion that adoption of the plan would not adversely affect the 25 federally listed species occurring on the forest (FWS Letter of Concurrence, December 17, 2003, A.R. #JAH134)…
- …the FWS concurrence letter stated that 'the requirements of Section 7 of the Act have been fulfilled' related to the proposed action (A.R. #JAH1334). To

> fulfill requirements of Section 7(a)(2) the action agencies area required to use the 'best scientific and commercial data available' (16 U.S.C §1536(a)(2))."

A 1997 Biological Assessment was done for the 1986 Land and Resource Management Plan for the Cherokee National Forest. Then, another Biological Assessment (2003) was completed for the 2004 Revised Land and Resource Management Plan. "It is not possible to compare the outcomes of two BAs evaluating two different LRMPs, each with its own unique combination of goals, objectives and standards, management prescriptions, and management area allocations. The biological opinions associated with a particular LRMP were prepared by the FWS. Again, it is not possible to compare the outcome of BOs evaluating different LRMPs." (Appeal Decision Page 38)

Subsequently, the 2006 Appeal Decision states: "[a] review of the RLRMP, FEIS, and accompanying records demonstrates that the Cherokee met its consultation requirements and used the best available scientific information as required by the ESA. I find no violation of law or regulation." (Appeal Decision Page 39)

(S31 continued): The inadequate provision for and analysis of species diversity, viability and the Management Indicator Species (MIS) program, and the lack of sufficient, biologically-relevant MIS, under NEPA and NFMA;

Response: From the 2006 Appeal Decision: The 2006 Appeal Decision discusses species viability analysis on Pages 24-32.

NFMA regulatory requirements for the designation of Management Indicator Species (MIS) found in 36 CFR 219.19(a)(1) states: "In order to estimate the effects of each alternative on fish and wildlife populations, certain vertebrate and/or invertebrate species present in the area shall be identified and selected as management indicator species and the reasons for their selection will be stated."

The 2006 Appeal Decision further clarifies that "NFMA implementing regulations do not specifically require the identification of existing native and desired non-native vertebrate species in the planning area for which each MIS have been selected; the regulations simply require the reasons for selection of a species as MIS be stated (36 CFR 219(a)(1))." In addition, the 2006 Appeal Decision states:

> [t]he Forest followed a well-documented process for selection of MIS (MIS Selection Process Record, Cherokee NF, A.R. #MJP018) and clearly stated the reasons for selection of each species. They considered selecting species from each of the five categories listed in the regulations at 36 CFR 219(a)(1), including those species whose 'population changes are believed to indicate the effects of management activities on other species of selected major biological communities.' The Forest reasonably interpreted this category to be those species conditions within a community, [where those] ecological conditions should be

important to other members of the community as well' (A.R. #MJP018). (Appeal Decision Page 24)

In conclusion, the 2006 Appeal Decision states that "[t]he RLRMP and FEIS, including supporting documentation, meet the requirements of 36 CFR 219 for terrestrial, aquatic, and locally rare species viability. The selection process for MIS is adequately documented. Management direction is included in the RLRMP, as appropriate, to address species viability, and locally rare species were considered and addressed. I find no violation of law, regulation, or policy." (Appeal Decision Page 32)

(S31 continued): The failure to consider information regarding existing old growth, to adequately analyze and protect old growth and to designate an old growth network (appeal of RLRMP filed by SAFC, CFV and others).

Response: From the 2006 Appeal Decision: The 2006 Appeal Decision discusses old growth on Pages 47-48. The disclosure within the 2006 Appeal Decision states "[t]here is no requirement in NFMA, the implementing regulations at 36 CFR 219, or in Forest Service Policy that Forest Plans address old growth." The Southern Region "recognizes old growth forests as a valuable natural resource worth of protection, restoration, and management" (Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region). The Regional Forester acknowledges reliance on this guidance in the Cherokee NF RLRMP ROD (p.6)." "Old growth is identified as a significant issue in the revision of the Cherokee NF RLRMP (FEIS, p. 11). The FEIS discusses old growth and the effects of various alternatives on old growth (pp. 181-188), and the RLRMP establishes old growth goals, objectives, and standards, (p. 38)…RLRMP Appendix D-Old Growth Strategy presents a strategy for existing old growth, possible old growth and future old growth. FEIS Appendix H provides detailed responses to the appellant's concerns regarding old growth (pp. 49-52).

Based on the appeal decision finding statements as previously stated, the Big Creek Project proposes to implement the 2004 RLRMP for the Cherokee National Forest. The Big Creek Project discloses information within the geographical parameters including alternatives based upon the purpose and need of the project area.

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